

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in this Application:

Listing of Claims:

1. (Currently amended) A vertical heat exchanger comprising:
a pair of first fluid passing ports for flow of a first fluid through a tube;
an upper tube sheet through which the tube passes, the underside of the upper tube sheet forming a boundary between the upper tube sheet and a shell;

a pair of second fluid passing ports for flow of a second fluid through thea shell; and
a vent pipe for venting a gas, the gas locating to the upper portion of the shell during operation of the vertical heat exchanger, at least part of one end of the vent pipe being made of thean upper tube sheet part and being fixed to the boundary between the upper tube sheet and the shell and the other end of the vent pipe being connected outside the heat exchanger to a an immediately adjacent second fluid passing port passing the same fluid as the vent pipe, whereby the fluid flowing through the vent pipe drives out the gas.

2. – 4. (Canceled).

5. (Previously presented) A heat exchanger according to claim 1, wherein the heat exchanger is a member selected from the group consisting of a shell-and-tube heat exchanger and a spiral heat exchanger, wherein the upper tube sheet corresponds to an upper cover in the case of a spiral heat exchanger.

6. – 17. (Canceled).

18. (Currently amended) A vertical heat exchanger of claim 1 further for cooling a fluid comprising:

~~a pair of first fluid passing ports for flow of a first fluid through a tube;~~
~~a pair of second fluid passing ports for flow of a second fluid through a shell; and~~
a drain pipe at least part of one end of which ~~being~~ is made of a lower tube sheet part and ~~reaching~~ reaches the interior of the shell and the other end of which is connected outside the heat exchanger to a an immediately adjacent second fluid passing port passing the same fluid as the drain pipe; ~~and~~

~~a vent pipe for venting a gas, at least part of one end of the vent pipe being made of an upper tube sheet part and the other end being connected outside the heat exchanger to an immediately adjacent second fluid passing port passing the same fluid as the vent pipe, whereby the fluid flowing through the vent pipe drives out the gas.~~

19. (Cancelled).

20. – 24. (Canceled).

25. (Currently amended) A vertical heat exchanger according to claim 18, wherein the connection of the vent pipe with the ~~shell side~~ second fluid passing port is further connected to a pipeline ~~and is loaded with a back pressure on the connected pipeline~~, the pipeline having at least a portion which is at a level higher than the upper tube sheet, and which comprises comprising a valve nozzle, whereby the gas accumulated in the upper part of the shell is expelled through the ~~nozzle valve~~ in the pipeline.

26. (Currently amended) A vertical heat exchanger according to claim 18, further comprising a first source of the first fluid, the first source being fluidly connected to the first fluid passing port, and a second source of the second fluid, the second source being fluidly connected to the second fluid passing port, wherein the first fluid comprising an easily polymerizable substance is passed through the first fluid passing port of the heat exchanger and the second fluid comprising a low temperature fluid is introduced to the ~~shell side~~ second fluid passing port as coolant.

27. (Currently amended) A vertical heat exchanger according to claim ~~18~~26, also comprising a stirrer in the lower part of the heat exchanger, wherein when the second fluid flowing through the shell is introduced or discharged through the drain pipe instead of through the second fluid passing port, ~~and wherein the~~ second fluid in the lower part of the heat exchanger is stirred as it is fluidized.

28-29. (Canceled)